

**AMENDMENTS TO THE DRAWINGS**

This Amendment encloses a replacement drawing sheet which corrects Figures 4 and 5 to include the legend "Prior Art." Applicants respectfully request withdrawal of this objection.

Attachments: Replacement Sheets

Annotated Sheet Showing Changes

**REMARKS**

Applicants submit a Petition and Fee for a One-Month Extension of Time.

Claims 2-14 are all the claims presently pending in the application. Claims 2-4 are amended to more clearly define the invention and claims 5-14 are added. While Applicants completely disagree with the Examiners reasoning and rejection of claim 1, and indeed submits that present claim 1 is clearly patentable over the applied references, so speed prosecution claim 1 is canceled. Claims 2 and 5 are independent.

These amendments are made only to more particularly point out the invention for the Examiner and not for narrowing the scope of the claims or for any reason related to a statutory requirement for patentability.

Applicants also note that, notwithstanding any claim amendments herein or later during prosecution, Applicants' intent is to encompass equivalents of all claim elements.

Applicants gratefully acknowledges that claims 2-4 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. This Amendment rewrites claim 2 into independent form including all of the limitations of claim 1, thereby placing claims 2-4 into condition for allowance.

**I. THE CLAIMED INVENTION**

An exemplary embodiment of the claimed invention, as recited by, for example, independent claim 5, is directed to an electronic controller for a variable nozzle control apparatus that includes an angle sensor that detects a rotation angle of an output shaft, which drives a vane

of a variable nozzle, and that outputs an actual angle signal, an electronic control circuit that receives a vane opening signal from an engine electronic control unit and that provides an output signal based upon the vane opening signal and the actual angle signal, and a driver that drives the output shaft based upon the output signal.

Conventional variable nozzle controllers include a duty solenoid valve that uses a pressure chamber and a pressure actuator to vary the vane opening of a turbocharger. The engine electronic control unit receives a boost signal as feedback from the turbocharger and controls the duty solenoid valve using (among other signals) the boost signal.

These conventional controllers have several problems, including a misarrangement of the precision of the duty solenoid valve and the boost signal, a temperature drift, and linear interpolation computing errors. Further, these controllers have not been able to carry out control to an optimum value and the load hysteresis through the system is quite large and, therefore, the system has very poor resolution. Additionally, these controllers include a control line to the duty solenoid valve that is susceptible to electro-magnetic noise and/or interference.

In stark contrast to these conventional controllers, the present invention provides a controller having an electronic control circuit that receives an opening indication information of the vane from the engine electronic control unit. In this manner, the present invention, reduces the load of the software of the engine electronic control unit, eliminates various hoses, forms a control signal line that does not require noise countermeasures, mounts the electronic controller on the turbocharger to reduce the overall size, decides whether the vane opening is correct by performing a comparison, and enhances resolution of the control over the vane opening. (Page 8, line 15 - page 9, line 9).

## **II. FORMAL MATTERS AND CONCLUSION**

The Office Action objects to the drawings. This Amendment encloses a replacement drawing sheet which corrects Figures 4 and 5 to include the legend "Prior Art." Applicants respectfully request withdrawal of this objection.

In view of the foregoing amendments and remarks, Applicants respectfully submit that claims 2-14, all the claims presently pending in the Application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the Application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

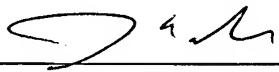
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The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: 3/22/05

  
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COMMUNICATION INFORMATION FROM ENGINE ECU

VANE INDICATION OPENING

STATUS INDICATION INFORMATION

31

STATUS INFORMATION

COMMUNICATION INDICATION TO ENGINE ECU

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18a

18b

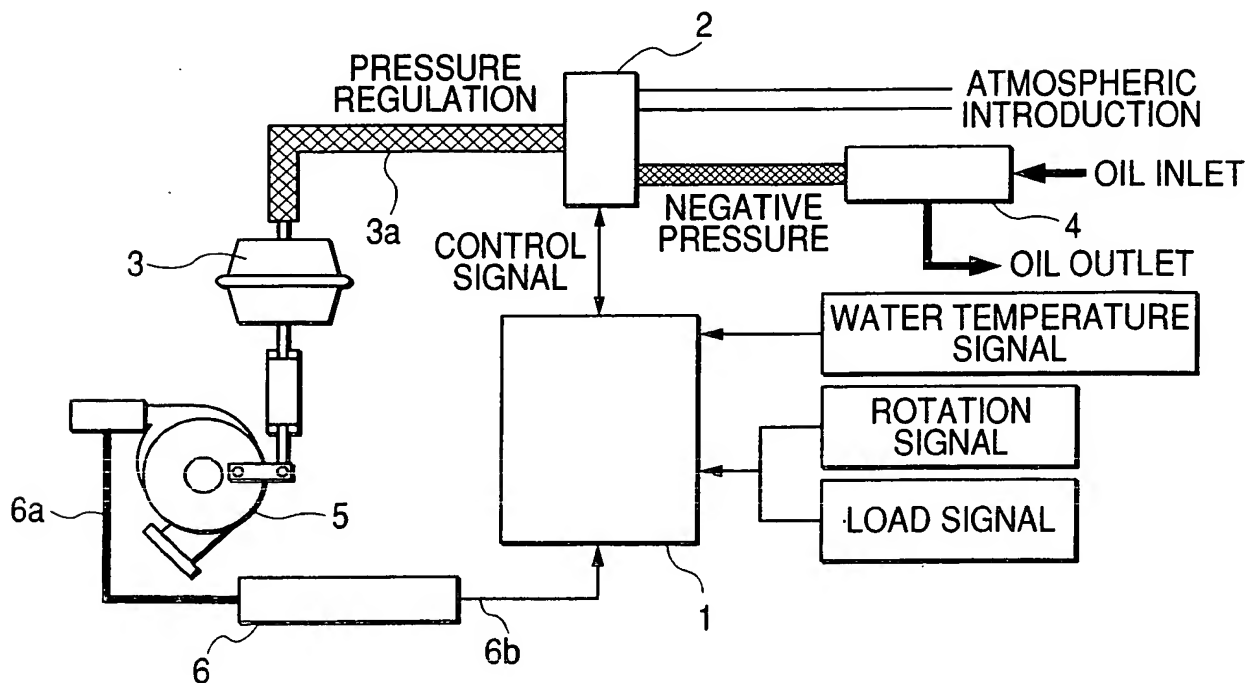
14c

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A2

A4

FIG. 4 PRIOR ART



**FIG. 5** PRIOR ART

